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AUTHOR Hawkes, Mark
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ABSTRACT

A study was undertaken to determine how telecommunications technology affects teacher reflection and collaboration. Study participants, eight teachers currently practicing in both public and private schools, were interviewed several times over the school year. Analysis of the data revealed several important areas of impact regarding use of telecommunications technology related to teacher reflection and collaboration. Some outcomes were: self-disclosure, infusion of new ideas, descriptive feedback, frequency of affirmation, sustained discourse, and more authentic sources. Study data showed that teachers do value learning from other teachers and that collaborations, partnerships, and networks like the one described appear essential to providing opportunities for teachers to learn and communicate with groups outside the school building. Telecommunications technologies appeared capable of fostering a "culture of inquiry," moving teachers beyond the boundaries of their own classrooms, schools, and districts. Networked technologies constituted a flexible and dynamic response to the specific and changing needs of teachers and were immediately accessible and sustainable. A chart showing "Claims for Teacher Use of Educational Telecommunications Technologies" is appended. (Contains 33 references.) (ND)

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Employing Educational Telecommunications Technologies as a Professional Development Structure for Facilitating Sustained Teacher Reflection, Collaboration, and Inquiry

Mark Hawkes

Evaluation and Policy Information Center

North central Regional Educational Laboratory

1900 Spring Road, Suite 300, Oak Brook, IL 60521

mhawkes@ncrel.org

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Employing Educational Telecommunications Technologies as a Professional Development Structure for Facilitating Sustained Teacher Reflection, Collaboration, and Inquiry

Over the last decade, calls for reform in American education have been both loud and enduring. As persistent as these calls to change have been, they are not without historical precedent. Reform themes in curriculum development, school governance, student assessment, and other areas have recurred several times since Horace Mann introduced the common school curriculum for the first eight grades (Goodlad, 1984).

The variety of reforms that have been suggested are not necessarily a product of educational leaders and policymakers' failure to diagnose problems or promote appropriate solutions. Nor are they solely in response to the frequently criticized rational model of educational organizational behavior, a model that has sought to align curricula, texts, tests, and instructional goals across district and often statewide levels (Cuban, 1990). Rather, as Cuban explains, reforms on familiar topics continue to return with each change in societal values that are often formed and reformed by economic, political, or cultural events. Among the first of institutions called to respond in societal shifts in values are schools (Cremin, 1988). However, schools' responses to reform are often varied and unstructured. Although schools often take the initiative to improve the delivery of instruction (Elmore & McLaughlin, 1988; Hansot & Tyack, 1988), these initiatives tend to do little to change the process of teaching and learning (Fullan, 1993).

A primary obstacle to meaningful and sustained change in teaching and learning is the pressure schools feel to conform (Cuban, 1990). Schools and districts with distinctly different looks from other schools or districts have, until recently, run the risk of having questions raised about their credibility (DiMaggio & Powell, 1983). This probably explains why schools over the years and across local, regional, and state boundaries have looked remarkably alike despite the autonomy local school control provides for shaping learning and instruction in almost limitless forms. Reform efforts, based on the assumptions of uniformity, however, have failed (Elmore & McLaughlin, 1988).

School reforms have also failed because of their inability to penetrate and be successful in the classroom. Frequently, policymakers have neglected to recognize limitations in resources, ability, and interest that schools have for making changes in specified areas (McLaughlin, 1991). Additionally, teachers have rarely been consulted on issues of reform. Consequently, school improvement models with a "fix-it" orientation hit the classroom promising the delivery of new parts—better curriculum, higher standards, new tests—by someone outside the classroom—a curriculum specialist, the legislature, the taxpayer, the state education department. (Osterman & Kottkamp, 1993).

While change forces targeting the classroom may be well designed and organized, teachers work in relative isolation and end up implementing change prescribed by others at their own pace and discretion. Even though tight structures exist for the evaluation, supervision, and coordination of teaching, practices for improving learning in the classroom, these structures are largely contrived and do little more than placate regional and state directives for conducting such oversight of teaching (Elmore, 1992; Elmore & McLaughlin, 1988). Clearly, teacher input

regarding the consequences of a reform initiative on themselves and their students is often missing (Little, 1993).

Recognizing and Facilitating Professional Knowledge Building

Recognizing that schools can't be improved without properly improving the skills, abilities, and input of teachers has been perhaps most detrimental to efforts of school reform (Guskey & Huberman, 1995). Many policymakers and administrators, however, are slowly recognizing the teaching professional's role in school improvement. Increasingly, a number of programs/practices have been put in place to elicit teachers' contributions. Most of these practices, however, are structural, formal, and institution-based (i.e., shared decision making and organizational rearrangements). These site-based authority mechanisms represent a clear effort to empower teachers and improve teaching and learning, but their effects are of little consequence where it really matters—in the classroom (Lichtenstein, McLaughlin, & Knudsen, 1992).

In contrast, knowledge-based reforms recognize teacher revitalization as a product of access to professionally relevant knowledge. In a study of teacher empowerment through professional knowledge, Lichtenstein, McLaughlin, & Knudsen (1992), categorized teacher knowledge into three overlapping areas:

Knowledge of Educational Policy—Knowledge of educational policy facilitates teacher influence both up and down the educational system. What teachers know about curriculum policy can be applied to the classroom practice and can wield influence up the system at local, state, and national levels. Connecting to the policy system makes teachers aware of the policy

debates taking place at broader levels. This policy awareness better prepares teachers to plan long-term classroom activities and instills in them the certainty that they can make a difference in policy decisions.

Knowledge of Subject Area—Disciplinary knowledge provides a foundation for teacher authority and professional discretion. Subject knowledge also provides a basis for collegiality as engaging peers in subject matter at a new and deeper level is rejuvenating. Also, learning more about the content area serves to expand a teacher's perception about what students are capable of doing and how current curricular delivery can be enhanced.

Knowledge of the Professional Community—Knowledge of the professional community builds teacher professionalism by helping teachers recognize their own expertise. Breaching the isolation of the classroom is important to the process of building teacher capacity to be effective in the classroom. Knowledge of colleagues' classroom practices is critical because it builds a "web of shared experiences" that augments teacher confidence and helps them critically analyze their own work and ideas. Knowledge of their professional community also allows teachers to expand their notion of what is possible within their own practice and profession as a whole. Teachers come to envision the "larger picture" of teaching.

The "kinds" of knowledge listed above each fulfill a unique role in creating the composite view of teacher knowledge. However, knowledge of the professional community provokes particular interest with its references to collaboration and individual reflection. Building teacher

practice through this method implies professional development that "engage(s) teachers in the pursuit of genuine questions, problems, and curiosities in ways that leave a mark on perspectives, policy, and practice" (Little, 1993). Reflecting on personal professional experiences and discussing them with colleagues allows teachers to focus change on pedagogical beliefs and practices (David, 1996). In this way, teachers are not consumers of knowledge, but participants in constructing knowledge about teaching that is intimately connected to their own classrooms and schools.

In spite of the perceived value of collaborative, reflective strategies for improving teacher practice, professional development processes remain largely unchanged. Teacher inservice is frequently detached from classroom realities. Present professional development is characterized by the delivery of an assortment of relatively abstract ideas providing little support to the practice of continuous learning (Lieberman, 1995). Teacher learning takes place primarily in a workshop, a series of workshops, or a conference. The training model of teacher development is episodic, placing teachers in passive roles as consumers of knowledge produced elsewhere (Little, 1993). The very approach to teaching deemed undesirable for students is the same approach by which professional development is being delivered to this nation's teachers (Corcoran, 1994).

Telecommunications Technologies as a Tool for Reflective Practice and Collaboration

This new rationale for revising K-12 teacher development so that it is both more reflective and collaborative, begs the question, "Are new telecommunications technologies a suitable application for this task?"

Broadly defined, telecommunications technologies are modes of communication used to transmit information from one place to another. Familiar telecommunications formats include broadcast, cable, and closed-circuit television; and one-way video with two-way audio link or two-way video and audio links. Newer telecommunications technologies include the Internet, World Wide Web (WWW), e-mail, news groups, listservs, and electronic bulletin boards. These newer networked capabilities offer access to information from any network in the world using a standard common hypertext interface to organize and search for information. It is these technologies that are targeted in this study.

There has been significant dialogue in the literature supporting the use of educational telecommunications technologies for meeting the collegial and collaborative needs of professional development (see Appendix). Researchers claim that the use of these technologies reduce the isolation that many teachers feel is a part of their profession (Honey, 1995; Ringstaff, Sandholtz, and Dwyer, 1994); provide more and better leadership opportunities for teachers (Ruopp, Pfister, Drayton, & Gal, 1993; Dryli & Kinnaman, 1995); and provide development opportunities that are sustained, focused on the teachers' needs, and self-directed (Honey, 1995; Watts & Castle, 1992). Besides demonstrating that the volume of meaningful dialogue has increased among teachers communicating through electronic networks (Kjelgaard & Norris, 1994; Solomon & Solomon, 1995; Kimball, 1995), educational researchers have also been able to show that telecommunicated dialogue energizes teachers and renews their belief in the profession (Armstrong, Davis, & Young, 1996; Ruopp, Pfister, Drayton, & Gal, 1993).

As equally asserted as advocacy claims are adversarial positions against telecommunicated teacher development. One claim holds that increased telecommunications technology use by educational professionals will, in fact, foster teacher isolation by reducing the amount of face-to-face dialogue that many feel is essential (Postman, 1992, P. 17). Many opponents of the use of educational telecommunications technologies also believe that exchanges between professionals using these technologies are superficial, addressing only surface level issues that do little to improve the core of teaching and learning (Honey, 1995). This assumption spawns from a belief that while networked contact brings teachers with similar interests together, the diversity of the teacher's disciplines, the student population they serve, their institution's overarching mission, and the cultural/socioeconomic milieu they work in diverges greatly. Finally, non-support from peers and supervisors in implementing new strategies of a network origin is reported to shift teachers allegiance from the schools in which they work to the network, even when teachers have outstanding credentials within their own schools (Corcoran, 1995, P. 40; Lieberman & McLaughlin, 1993).

The intent of this study is not to validate, nor invalidate any of the claims made about the use of telecommunications technology use for professional development. However, when examined against the framework of teacher knowledge constructed by Lichtenstein, McLaughlin, and Knudsen (1992), claims made about the use of telecommunications technologies are heavily clustered in the category of knowledge of professional community. The study introduced here attempts to determine what outcomes on teacher reflection and collaboration telecommunications technology use have.

Study Methods

Through investigative inquiry, processes were applied to co-construct, as closely as possible, teachers perceptions of their own professional development facilitated through and by educational telecommunications technology.

Inquiry began by clearly marking the organizational, instructional, and pedagogical boundaries of telecommunicated professional development. Analysis followed to identify all plausible alternatives for explaining the impacts with a gradual narrowing of the alternatives through an iterative process of hypothesis building and testing. As examination of working hypotheses explaining the impacts of telecommunicated technologies on teacher development continued, evidence emerged to either buttresses or weakens hypotheses. Hypotheses best supported at the termination of the study are becoming the explanations for the outcomes of the use of telecommunications technologies.

A core of eight teachers currently practicing in both public and privates schools informed this study. Teachers were selected on the basis of their technological expertise or lack thereof, the levels of students and the discipline they teach, their age and gender, and the cultural and socioeconomic settings in which they teach. While stratification does present the opportunity to explore the diversity and range of experiences of participating teachers, it was not used as an effort to promote generalizations.

The primary tool used to gather data was participant the interview. A repeated interview schedule with the same teachers over the course of the 1996–1997 school year provided the opportunity to narrow the focus of discussion and more deeply and richly explore various facets

of their experiences. Where appropriate, supervising administrators and building colleagues were to be interviewed. An effort was also be made to study the school context, which included present staff development policy and practices, the nature of professional development activities, and local and state mandates that had an impact on professional development. Member checks to induce teacher reaction will serve as a validation mechanism as well as an impetus for inquiry along newer themes. As a secondary data tool, document analysis is expected to provide insights tense on teacher development and perhaps confirm interview findings. Such documents might include archives of e-mail posts to colleagues and the researcher, student feedback, supervisor evaluation forms, and personal professional development plans. Participant observation in both the classroom and at faculty events also provided useful data.

Data analysis was ongoing throughout the study. Field notes, important documents, and interview transcripts were continuously analyzed to identify emerging themes and patterns (Bogdan & Biklen, 1982). Where gaps or incidences of processes remain unexplained, the researcher returned to the data source for clarification and further understanding. Thematic sorting and categorization of data took place frequently during the inquiry process. Analysis continued as data were used to robustly describe, explain, and support identified outcomes. With careful attention to teachers' experiences and thorough analysis, ideas were established whereby teachers' perceptions of their professional roles and development using telecommunications technology might be understood.

Preliminary Results

While data is still being collected and analyzed, some notable impacts have emerged regarding telecommunication technology use related to teacher reflection and collaboration. Those outcomes are introduced and discussed briefly below.

Self-Disclosure—One thing many teachers identified as keeping them from discussing instructional strategies, motivational ideas, learning activities, and other experiences with their school colleagues was the notion that admitting a problem or having a question constituted the equivalent of acknowledging "some chink in your teaching armor. Unless you're a very new teacher, you don't ask too many questions about teaching for fear of being perceived incompetent." Other teachers also indicated that the process of asking questions had set up a hierarchy or popularity and expertise among teachers in the school. The anonymity that dialogue on networked technologies gives teachers, are reported to provide them with the comfort and safety necessary to ask questions and disclose information about teaching they are otherwise unwilling to share with all but the most trusted friends.

Infusion of New Ideas—Many teachers informing the study described a professional development program that seemed to recycle itself every three to five years. The cycle involved the same vendors of professional development on the same topics at the same conferences, often with the very same individuals conducting development activities from year to year. It's a process that teachers say has left their practice "fairly good at one thing, but relatively bankrupt at so many others." Telecommunications technologies, however, have been a "precious" conduit to new ideas. In fact, ideas have come so fast that some teachers report being fatigued with trying to

incorporate all the new ideas in teaching and learning. They're using strategies of focusing and selective application in an attempt to pace their efforts.

Descriptive Feedback—Descriptive feedback discusses in greater detail the behaviors, feelings, and outcomes that are associated with teaching and learning. On contrast to descriptive feedback is prescriptive feedback which is frequently interspersed with, "you ought to . . ." or "you should . . ." messages often characteristic of supervisor/subordinate relationships (Osterman & Kottkamp, 1993). Networked communication is reported to facilitate more descriptive messages. Network-facilitated descriptive feedback can be multiperspectived and the nonevaluative dialogue sets the stage for deeper and richer exploration of the event.

Frequency of Affirmation—Expressions of support, affirmation, and are much more frequent in networked dialogue than in face-to-face dialogue. One teacher refers to expressions of affirmation as "the things people would probably like to say when their with each other only they don't for fear of being taken as a phony or having to watch you wallow in the glory. Clearly, there's an element of social interaction here worth more study.

Sustained Discourse—Many teachers to this study recall conversations or faculty meetings taking place solely to reach consensus on an issue or decision. Often these decisions were made in haste because of time constraints or because decisions "had to be made." Only occasionally were decisions postponed to allow more time to contemplate the outcomes. Such is not the case with networked dialogue. The number of diverse voices feeding into a single issue and the asynchronous nature of the technology generally sustain dialogue and challenge conclusions that otherwise might end the process of reflection.

More Authentic Sources —Perhaps a decade or more of criticism and blame directed at teachers for the abysmal performance of schools has made them relatively resistant to perspectives of others outside their own profession. No matter how accurate or inaccurate the claims may be, teachers have resented or dismissed perspectives leveled at them from outside their ranks. Because most telecommunications networks teachers participate on are generally composed of teachers (or those very closely associated with teaching), participants place much more value on the insights—critical or otherwise—provided by their peers than those perspectives provided by nonpractitioners.

Summary

In a preliminary stage of data synthesis, the study shows that the impacts telecommunications technologies have on teacher reflection and collaboration are promising. Teachers do value learning from other teachers (Sandholtz & Ringstaff, 1996). Collaborations, partnerships, and networks like the one described here appear essential to providing learning group thinking opportunities with groups outside the school building (Lieberman, 1995). Telecommunicated technologies appear capable of fostering a "culture of inquiry," moving teachers beyond the boundaries of their own classrooms, schools, and districts. Networked technologies constitute a flexible and dynamic response to the specific and changing needs of teachers and are immediately accessible and sustainable.

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Appendix

Claims for Teacher Use of Educational Telecommunications Technologies

*Domains of Knowledge	Advocacy Claims	Adversarial Claims
Subject Area	• Increases the volume of information available U.S. Department of Education, 1995 U.S. Congress, Office of Technology Assessment, 1995 Ruopp, R., Pfister, M., Drayton, B., & Gal, S., 1993 Burrall B., 1994 Levin, J., Waugh, M., Brown, D., & Clift, R., 1994 • Makes advanced/continuing course work easier Branstad, T., 1996	
Educational Policy	• Tears down cultural biases Dryli, O. E. & Kinnaman, D.E., 1995 • Bypasses local authority and bureaucracies that mandate or support professional development only in certain areas Perelman, L. J., 1992 Watts, G.D., & Castle, S., 1992	• Creates "unnatural communities" Corcoran, T. C., 1995 Lieberman, A., & McLaughlin, M. W., 1993
Professional Community	• Nullifies the notion of individual expertise making it an attribution of the network or system Perelman, L. J. 1992 Merseth, K. 1992 Corcoran, T. C.,1995 Watts, G.D., & Castle, S., 1992 • Reduces teacher isolation Branstad, T., 1996 Honey, M., 1995 U.S. Department of Education, 1995 Ringstaff, C., Sandholtz, J. H., & Dwyer, D., 1994 Thompson, T., 1993 Watts, G.D., & Castle, S., 1992. Merseth, K., 1992	• Exchanges among teachers can be superficial Honey, M., 1995 • Can reduce commitment to school when support for new ideas and strategies is rebuffed Honey, M., 1995 • Defeats communal speech, orality, group learning, and cooperation among teaching staffs • Postman, N., 1992

	U.S. Department of Education, 1996. Fenimore, T. F., Donnelly, D. L., & Jones, B. F., 1988 • Increases collegiality/collaboration among teachers Branstad, T., 1996 Dryli, O. E., & Kinnaman, D. E., 1995 Ruopp, R., Pfister, M., Drayton, B., & Gal, S., 1993 Kjelgaard, P. A., & Norris, C. A., 1994 Solomon, G., & Solomon S., 1995 Kimball, L., 1995 Watts, G.D., & Castle, S., 1992 Levin, J., Waugh, M., Brown, D., & Clift, R., 1994 U.S. Congress, Office of Technology Assessment, 1995. U.S. Department of Education, 1996 • Creates/facilitates roles for mentors and other experts Peterson, N. S., & Facemeyer, K. C., 1996 • Renews beliefs in teaching as a profession Armstrong, D., Davis, R., & Young, G. 1996 Ruopp, R., Pfister, M., Drayton, B., Gal, S., 1993 • Allows teachers to communicate at a time that is best for them Honey, M., 1995 U.S. Department of Education, 1995 McKinsey, et al., 1995 Dryli, O.E., & Kinnaman, D. E., 1995 Watts, G. D., & Castle, S., 1992 Thompson, T., 1993 Burrall B., 1994 • Provides an environment of encouragement and innovation • Enables teachers to analyze their own practice without being self-conscious Honey, M., 1995 Solomon, G., & Solomon S., 1995 Merseth, K., 1992 • Provides quick review and feedback to teacher ideas Dryli, O. E., & Kinnaman, D. E., 1995	• Information can appear indiscriminately and is disconnected from theory, meaning, and purpose Postman, N., 1992 • Agentic shift" where responsibility for an outcome is transferred from humans to a more abstract agent Postman, N., 1992

	• Builds leadership and mentoring skills Dryli, O. E., & Kinnaman, D. E., 1995 Ruopp, R., Pfister, M., Drayton, B., & Gal, S., 1993. Ferdi, S., 1996 U.S. Department of Education, 1996 • Places teachers more directly in the role of the learner, giving them a new appreciation for the learning process Ferdi, S., 1996 • Increases dialogue between teachers and researchers Watts, G. D., & Castle, S., 1992 • Writing posts clarifies ideas and archives information for others to revisit Levin, J., Waugh, M., Brown, D., & Clift, R., 1994	
Access and Cost	• Overcomes the limitations of physical handicaps by making knowledge ubiquitous Perelman, L. J., 1992 • Reduces the cost of professional development Perelman, L. J., 1992	• Educators have limited/inequitable access to networked technologies Honey, M., 1995

* Domains of knowledge based on a taxonomy presented by Gary Lichenstein, Milbrey McLaughlin, Jennifer Knudsen, in "Teacher Empowerment and Professional Knowledge. In The National Society for Studies in Education 91st Yearbook, Part II, edited by Ann Lieberman (University of Chicago Press, 1992).